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STUDENT REPORT

OIL POSES A THREAT TO
U.S. NATIONAL SECURITY

MAJOR CYNTHIA A. MATTHEWS 88-1690

"insights into tomorrow"

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TITLE OIL POSES A THREAT TO U.S. NATIONAL SECURITY

AUTHOR(S) MAJOR CYNTHIA A. MATTHEWS, USAF

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Oil is the primary energy source for the U.S., her allies, and her friends--oil is the mainstay of their economies. Of great concern is the fact that they are becoming increasingly dependent on foreign, unstable sources for oil imports. This study identifies international and domestic political, military, and economic threats to the U.S. posed by oil and assesses the impact of these threats to the national security of the U.S. The study concludes that oil poses a threat to U.S. national security and that positive, long-term actions toward lessening dependency on oil are essential.

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PREFACE

The intent of this research paper is to demonstrate that oil poses a threat to the national security of the United States. Energy security plays a vital role toward assuring that U.S. national interests, values, and security are maintained--oil is an integral part of U.S. energy security because of her increasing dependence on oil imports. Threats involving oil are many and varied--these threats cross the spectrum of the political, military, and economic realms. The U.S. has experienced some severe problems as a direct result of oil--disruptions in supply, volatile pricing, etc. The problem is that when times are good--that is, supplies and prices are stable--then complacency sets in and the U.S. fails to look toward the future and take action to prevent recurrence. A very real concern is that crisis management of future oil problems may be ineffective--ergo, a critical threat to the national security of the U.S. The author's hope is to create a greater degree of awareness of the magnitude of the problem and take a small step toward stopping complacency in energy management.

My thanks to Lt Col A. P. Tribble, Chief, National Security Affairs Division, Air Command and Staff College, Maxwell Air Force Base, Alabama, for advising the author in this endeavor. His timely advice and suggestions were invaluable in completing this project.

ABOUT THE AUTHOR

Major Cynthia A. Matthews entered Air Force Officer Training School in October 1973. After commissioning in January 1974, she entered training for the Administrative Management/Executive Support career field at Keesler Air Force Base, Mississippi. Subsequently, she was assigned as Assistant Chief, Central Base Administration, 67th Combat Support Group at Bergstrom Air Force Base, Texas. From 1976-1977 she served a one-year remote tour at Shemya Air Force Base, Alaska, with the 16th Surveillance Squadron as Chief of Administration. Then she moved to Hickam Air Force Base, Hawaii, to serve three years as Headquarters Squadron Section Commander with the 1957th Communications Group. Subsequently, in 1980, she was reassigned to Headquarters Pacific Air Forces where she became the Executive Officer to the Deputy Chief of Staff for Plans. In 1981 Major Matthews was reassigned to the Directorate of Administration, Headquarters Tactical Air Command, Langley Air Force Base, Virginia. She developed a new division--Plans and Programs Division--within the directorate and was selected to be the first chief of the new division. In 1984 she moved to Shaw Air Force Base, South Carolina, and career-broadened into the recruiting field. At the 3537th USAF Recruiting Squadron she served first as Chief, Officer Training School Recruiting Branch; then as Chief, Operations Branch. Major Matthews has a Bachelor of Science degree in Medical Technology from the University of Texas at Arlington and a Master of Science degree in Systems Management from the University of Southern California. She has completed Squadron Officer School by correspondence and in residence (distinguished graduate); Air Command and Staff College and National Security Management via correspondence; and Air War College by seminar. Her decorations include the Meritorious Service Medal with two oak leaf clusters and the Air Force Commendation Medal with two oak leaf clusters. She is married to USAF Major (Lieutenant Colonel-select) Edward C. Matthews II; they have one daughter, Cissy.

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EXECUTIVE SUMMARY

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"insights into tomorrow"

REPORT NUMBER 88-1690

AUTHOR(S) MAJOR CYNTHIA A. MATTHEWS, USAF

TITLE OIL POSES A THREAT TO U.S. NATIONAL SECURITY

I. Purpose: To identify international and domestic political, military, and economic threats to the U.S. posed by oil; to assess the impact of these threats to the national security of the U.S.; and to recommend actions to lessen the impact of the threats.

II. Problem: Oil is the primary energy source for the U.S., her allies, and her friends. Oil is the mainstay of their economies. They are heavily dependent on foreign, unstable sources for oil imports--and are becoming increasingly dependent on foreign oil as oil supplies are currently cheap, plentiful, and readily available. This situation has resulted in complacency and, as a result, research for alternative energy sources is decreasing--this points to an even greater dependency on oil in the future. Are the U.S., her friends, and her allies so heavily dependent on oil that the national security of the U.S. is placed in jeopardy?

III. Data: Statistics indicate that oil is both plentiful and cheap--and that the U.S.' dependency on foreign, unstable sources is growing. Because of this dependency, a wide variety of threats--involving oil--to the national security of the U.S. have been identified. These threats can be categorized as political, military, and economic threats and encompass both the international and domestic arenas. Primary international political threats include oil cartels using their monopoly to blackmail consumers (to include the U.S., her friends, and her allies) and influence their foreign policy; and

friends and allies of the U.S. developing a stronger set of bonds to the USSR through increased dependency on her for oil and other energy sources. Domestic political threats begin with the U.S.' political leadership. Because of renewed availability of oil supplies, coupled with cheap prices, complacency has set in with subsequent reduction in conservation and decreased interest in developing research programs for alternative energy sources. The actions taken by U.S. politicians directly relate to the pressure imposed by their electorates. Due to the tremendous U.S. debt--and associated budgetary concerns--attention to costly energy research programs has declined. Moreover, the general public perceives that no problem involving oil or other energy sources exists, so they do not exert pressure on their Congressmen to take preventive measures and seek alternative energy sources. Another domestic political threat revolves around environmental concerns which increase the expense for oil exploration, refinement, and storage, as well as inhibit continued development of such alternative energy sources as coal, nuclear energy, and synthetic fuels. Military threats involving oil are growing particularly in light of the continuing Iran-Iraq war, the subsequent Kuwaiti reflagging effort, the Arab-Israeli conflict, and general unrest throughout the world (in particular the developing countries). The economic threats involving oil impact the entire world--oil is the building block of most economies, particularly the U.S. Disruptions and/or severe fluctuations create havoc in economies worldwide.

IV. Conclusion: Oil indeed poses a threat to the national security of the U.S.--in fact, the stage has been set for the next energy crisis. The political, military, and economic threats involving oil in both the international and domestic arenas are severe. If long-term, positive actions are not taken to decrease dependence on oil and to become energy self-sufficient--and to help the U.S.' allies and friends achieve the same goals--then, the national security of the U.S. is placed in jeopardy.

V. Recommendations: First and foremost, the U.S.' senior politicians--beginning with the President--must understand the magnitude of the problem and instill in themselves a sense of urgency to resolving the U.S.' dependency on oil. Then they must communicate the problem to the American public and obtain their continuing support. A strong energy research program needs to be developed--use not only U.S. resources and talent, but those of her friends and allies, as well, in a cooperative effort. And finally, renewed energy conservation efforts need to be made.

Chapter One

INTRODUCTION

"The ability of the United States to defend its vital interests abroad while preserving its most cherished liberties at home will be severely challenged . . . by the uncertainties of the energy question. Energy thus poses the most serious and far-reaching challenge faced by our nation since the Civil War" (13:xi).

"Those who cannot remember the past are condemned to repeat it" (50:13). The first Secretary of Energy, James R. Schlesinger, quoted George Santayana's profound statement when he addressed the Americans for Energy Independence Conference on Capitol Hill on 20 December 1983. Because of the cyclical flow of attitudes pertaining to energy problems, Mr. Schlesinger advocated that "we benefit remarkably little from our prior experience" (50:13). The U.S. has experienced several energy emergencies: 1956--first Middle East oil embargo; 1965--New England power outage; 1967--Middle East oil embargo; 1972--fuel and propane shortages; 1973-74--oil embargo; 1974, 1977-78--national coal strikes; 1976-77--natural gas shortage; 1977-78--Iranian production curtailment; and 1980-88--war between Iran and Iraq (50:77-78;69:45). However, business generally returned to normal following resolution of the crises. Initiatives were taken to prevent recurrence of crisis situations, but once the initial negative impact was resolved, due to political pressures, the U. S. government turned emphasis toward other issues and deemphasized long-term resolutions toward the energy problem (50:6). The federal government still hasn't developed an effective policy for coping with a sudden energy cutoff (21:78).

However, energy problems will continue to plague the world environment and impact U. S. national security. Crude oil, natural gas, coal, electricity from hydropower, and nuclear power are the world's primary energy sources. In 1986 oil accounted for greater than 40 percent of the total world energy output, while the output for dry natural gas and coal was 20 percent and 28 percent respectively. Hydroelectric and nuclear power followed with 7 and 5 percent respectively of the world output. Combining all five energy sources, the U. S. and USSR led production in 1986; each country produced approximately 21 percent of the total world production. China followed in third place with 8 percent world production output (63:1).

Since oil accounts for the largest percentage of total energy production and consumption worldwide, this paper assesses how oil poses a threat to U.S. national security. Oil is particularly important because it is imbedded in all aspects of life, industry, and defense within the U.S.--it impacts the values and way of life of virtually every person in this great country. Moreover, the same integration is true of the allies and friends of the U.S., as well as the adversaries, such as the USSR and Eastern bloc countries.

Currently oil is plentiful, cheap, and readily available, but the real questions address the future: Will it continue to be plentiful, cheap, and readily available to the U.S. and her allies and friends? If not, what is the impact to the national security of the U.S.?

To first set the stage, Chapter Two assesses the status of oil in terms of estimated reserves, production, and consumption. This chapter will shed additional light on the issue of oil's criticality and importance--it will highlight the unbalanced distribution of oil resources for the U.S. and select countries/regions of the world. Next, in Chapter Three, the paper identifies threats involving oil sources. These threats are addressed militarily, politically, and economically in the international and domestic environments. Chapter Four looks at U.S. national security in light of the status of oil sources and the threats to these sources. Then alternative energy sources, conservation, and stockpiling efforts are identified in Chapter Five. This chapter is particularly important because it cites proactive measures which can minimize the negative impact of future oil disruptions and/or price fluctuations. Finally, the paper concludes with recommendations to prevent recurrence of an energy crisis in the event of disruption of oil supplies and/or fluctuations in oil prices.

Chapter Two

STATUS OF OIL

This chapter addresses the status of the top energy source--oil--in terms of reserves, production, and consumption for select countries/regions of the world. The status of energy in the U.S. and USSR is obviously important because of the rivalry between these two superpowers and the growing importance of energy in assuring national security for each country. Closely intertwined within the U.S.' national security interests are the interests of her two staunchest allies--Western Europe and Japan. They are particularly important because, as this chapter shows, they rely heavily on stable, foreign sources for energy supplies and contribute little to production. If their supplies are disrupted or prices increase significantly, this impacts the national security of not only Western Europe and Japan, but the security of the U.S., as well. The Middle East, Mexico, Venezuela, and Indonesia are crucial because of their vast resources. And finally, China is important because she is essentially energy self-sufficient--she "provides a model of intelligent and resourceful national energy policy which could well be emulated with benefit by more than one Western industrial country" (28:45-46).

The ensuing sections focus on the status of oil in terms of reserves, production, and consumption. The appendix highlights 1986 energy statistics for the major energy sources of oil, gas, and coal for the U.S., USSR, Middle East, Western Europe, Japan, China, Mexico, Venezuela, Nigeria, Indonesia, and Canada.

RESERVES

The highly volatile Middle East has the largest crude oil reserves with an astounding 401.9 billion barrels (bbls) estimated during 1986. Within this region Saudi Arabia dominates with 169.2 billion barrels, followed by Kuwait with 94.5 bbls, Iran with 48.8 bbls, and Iraq with 47.1 bbls. The USSR only has 59.0 bbls in reserves, while the U.S. follows with 26.9 bbls. Mexico, Venezuela, and Nigeria have very respectable reserves: 54.7, 25.0, and 16.0 bbls, respectively. Western Europe has 21.9 bbls, while China has 18.4 bbls and Japan has no reserves (63:78).

PRODUCTION

The Middle East tops the daily crude oil production line with 12,577 thousand barrels and the USSR is next with 11,615 thousand barrels. The U.S. produces 8,680 thousand barrels daily, followed by Western Europe and China with 4,002 and 2,614 thousand barrels. Mexico, Venezuela, Nigeria, and

Indonesia have a respectful production of 2,430; 1,787; 1,470; and 1,390 thousand barrels daily. Japan produces no oil (63:14).

CONSUMPTION

The U.S. hits the top of the list in consumption with 15,726 thousand barrels consumed daily. Western Europe follows with 11,956 thousand barrels consumed per day. Then USSR, Japan, Middle East, and China fall in line with 8,650; 4,333; 2,682; and 1,740 thousand barrels respectively. Mexico, Venezuela, Nigeria, and Indonesia consume at a rate of 1,529; 383; 215; and 475 thousand barrels daily (63:30-31).

IMPORTS

The U.S. imports 3,201 thousand barrels of crude oil daily--this equates to 20 percent of her consumption. The major countries/regions she imports from include: Mexico (715 thousand barrels daily); Africa (612 thousand barrels); Canada (468 thousand barrels); Far East and Oceania (374 thousand barrels); Venezuela (306 thousand barrels); United Kingdom (278 thousand barrels); and the Middle East (245 thousand barrels) (63:42). Western Europe imports 8,139 thousand barrels per day--her primary sources include Africa (2,653 thousand barrels); the Middle East (2,249 thousand barrels); United Kingdom (1,287 thousand barrels); and USSR (677 thousand barrels) (63:42). Japan's imports tally 3,331 thousand barrels daily--they arrive primarily from the Far East and Oceania (813 thousand barrels) and from the Middle East (2,328 thousand barrels) (63:42).

ANALYSIS

In order to get a better perspective of these statistics, here's a brief analysis. The U.S. consumes oil at a rate of 181 percent more than she produces while the USSR only consumes 74 percent of her production. The Middle East consumes at a remarkably low rate of only 21 percent of her oil production; however, perhaps even more eye-opening concerns the fact that this highly volatile and unpredictable region exports nearly 40 percent of the entire world oil exports (63:30-3. 42). Western Europe's consumption exceeds production by nearly 300 percent; and Japan depends totally on imports for her oil (63:30-31). Moreover, oil reserves--or lack of them--pose a potential threat. Using the current consumption rate and estimated reserves, here's the projected status of reserves for these regions: Reserves in the Middle East will last 44 years; China--29 years; USSR--19 years; Western Europe--6 years; and the U.S.--5 years. The proverbial big picture is clear. The U.S. and her allies (Western Europe and Japan) are heavy users of--and heavily dependent on--unstable oil sources. Because their vital interests and economies are consequently so dependent on oil (and they can't produce enough to keep up with the demand), the national security of each of these areas is in jeopardy (63:14, 30-31).

Chapter Three

THREATS INVOLVING OIL

Many threats involving oil energy sources have evolved primarily because of the importance of oil to the national security and economies of countries worldwide. These threats generate from both international and domestic sources. They can be categorized in terms of political, military, and economic issues and are particularly important as they impact U.S. national security (discussed in Chapter Four). The following sections discuss threats involving oil.

INTERNATIONAL THREATS

Political Threats

Political issues pertain to the ability to influence the behavior of nations. Economic factors overlap the political scene closely as economic issues tend to play an increasingly important role in the behavior of nations. Because of the importance oil plays in the economies of the industrialized countries as well as the developing countries, oil cartels have used their monopoly to blackmail consumers and influence their foreign policy. For example, the U.S. sold large supplies of modern conventional weapons to Arab states--an example of the directness of the threat (60:6, 10). A potential for blackmail occurred when energy-dependent Western Europe and Japan recognized the power of the oil-exporting countries. As a result they redirected their foreign policy toward the Arabs and away from the Israelis. Moreover, countries and regions of the world differ in their dependency on foreign oil. These factors combine to cause a rift in foreign policy between the U.S. and her allies (12:38, 41).

The USSR poses a unique set of problems for the U.S. The USSR is generally energy self-sufficient, but she, too, relies on Persian Gulf oil. She'll never allow the U.S. to become dominant in this area--the U.S. must be ever alert that she does not take action that appears to be contrary to USSR interests (12:26). Moreover, the Soviets are fully cognizant of the strategic payoffs of gaining leverage over oil flow--they have been positioning themselves along the oil sea lanes of communication and will be quick to take advantage of any opportunity to exert their control (69:46). Another potential political threat involves both the USSR and Western Europe: The USSR is wooing the European community through oil exports to Europe. This could eventually result in a stronger set of bonds between Western Europe and the USSR than between Western Europe and the U.S. (12:26). Yet another concern involving the USSR pertains to the Middle East. The USSR is quick to take advantage of instability and move in to fill the power vacuum. The

strategically important Middle East gives them a superb opportunity: They supply arms to Iraq; their Eastern European and North Korean friends supply Iran. Additionally, the USSR is pressing the region's nonbelligerent states for increased diplomatic, commercial, and military relations (37:2).

The developing countries factor into the political threat equation also. "As sources of strategic materials, markets for U.S. goods, and strategically important locations, they have become an integral part of the open international economic order the U.S. seeks to promote" (12:161). However, the "developing countries blame democracies rather than the Soviet bloc, to which they feel vulnerable militarily or on petroleum exporters to whom they feel vulnerable economically" (12:41). This means that the U.S. must be acutely attuned and sensitive to the stability and international relations with developing countries which are major oil exporters: countries of the Persian Gulf region, Mexico, Venezuela, Indonesia, and Nigeria (69:46). These countries have made the following strides over the past 20 years: doubled world energy consumption (from 10 percent in 1960 to 20 percent in 1984) and increased their energy supply from about 27 percent to 39 percent (29:133). Thus, the U.S. is placed in a sensitive position in dealing with Third World/ developing countries.

Another very real concern arises from the fact that the U.S. allies--Western Europe and Japan--perceive that American policy is inconsistent and occasionally is characterized by high-handed American pressure tactics. This could ultimately result in lack of support in resolving energy issues and perhaps exacerbate their becoming more dependent on the USSR. Japan is considered part of the Western alliance--she contributes to the stability of critically important Third World/developing countries through economic aid, thereby contributing to Western stability (6:2-3). Therefore, it is crucial that the U.S. be sensitive to Japan in her dealings. Moreover, because the North Atlantic Treaty Organization (NATO) is the cornerstone of U.S. national security policy, the U.S. must ensure that she does not hamper relations with NATO, thereby opening the door for the USSR to weaken or split the alliance (18:1). The bottom line: The U.S. must do all she can to support free oil flow to these international players who are so vital to the U.S. national security interests.

In summary, energy resources in general--and oil in particular--"have become a powerful lever for those who control them or can control their flow" (12:36).

Military Threats

The bulk of the world's resources--including oil--are located in politically unstable areas--particularly the Middle East-- where many people are hostile to the U.S. and Western countries. Tensions could quickly lead to an oil cutoff, which in turn would invite a military response if other efforts failed (15:11). The Iran-Iraq war has been a destabilizing force for over eight years. Because Kuwait supports Iraq in the war, Iran increased attacks on Kuwait. This resulted in the U.S. allowing 11 Kuwaiti tankers to be rechartered under the American flag, which in turn could drag the U.S. into the Iran-Iraq conflict, even though most of the Kuwaiti oil goes to Western Europe and Japan (20:15). The U.S. depends on about 8 percent of her oil

imports from the Persian Gulf, while Japan gets 70 percent and Western Europe obtains nearly 28 percent of their imports from this unstable and volatile region (63:42). President Reagan recently reaffirmed the "strategic importance of the Persian Gulf's oil reserves to the economies of the free world; the U.S. commitment to maintaining the free flow of this oil; and the U.S. commitment to prevent domination of the region by a hostile power" (43:2).

Economic Threats

The Administration has officially stated that the "unimpeded flow of oil through the Strait of Hormuz is a vital interest and critical to the economic health of the Western world" (7:1). Secretary of State, George Shultz, reiterated that stability in the Persian Gulf is crucial--"an oil flow interruption could have devastating effects on the pattern of world trade and on our economy" (49:1). Oil is intricately linked to economies worldwide. Price fluctuations and disruptions in oil supplies have created havoc in the global economic system. For example, witness the 1973-1974 Middle East oil embargo which resulted in a 400 percent increase in oil prices worldwide and caused a global recession. (The embargo amounted to a 15 percent reduction in oil supplies for the U.S.) This was followed in 1979 by another Middle East oil embargo--although the resulting 200 percent increase in oil prices was less than occurred with the 1973-1974 embargo, the actual dollar cost to the U.S. was greater (69:45).

Oil cartels have increased efforts to obtain a greater return from their products. Because of the intricate link of oil within the economies of countries worldwide--including the U.S.--chaos can (and has) resulted (60:6). Rising energy use, increasing dependence on oil, and increasing imports worldwide (except the oil-rich Middle East) threaten an imbalance of trade and an increase in vulnerability to an oil cutoff or rise in prices (15:11). However, in fairness to the Organization of Petroleum Exporting Countries (OPEC), 12 of the 13 members determined they had a responsibility to balance an oversupplied market, as well as to stabilize prices. They sought $18 per barrel reference price, but simultaneously had to cut production by all members to no more than 16.6 million barrels per day ceiling. This has not been achieved; therefore, the market remains unstable. The factors which influence the continuing instability are varied: "Iran and Iraq are at war; Saudi Arabia won't cut more than her fair share of production quota; Iraq won't cut production at all. Iran wants a price hike . . . . Saudi Arabia is bitter over Iranian demonstrations in Mecca" (41:13).

DOMESTIC THREATS

Political Threats

The circle of domestic political threats begins with the U.S. top leadership. Complacency has set in. In the 1979-80 era, energy was a top concern for 60 percent of the public. Conversely, in 1984 only 3 percent felt energy was a pressing issue. Barry Commoner, an economist and leading advocate of alternative energy sources, blames the media for the rapid rise and fall of the energy crisis. "The media tend to react in a superficial way." He

believes the "media failed to teach Americans that the world's sources are really growing scarce" (15:10-11). Of course, the reaction of the public directly impacts the action (or lack of action) Congress takes. Congress has put energy on hold in their effort to cut the budget deficit. Bill Livingston, press officer for Senator James McClure (R-ID), who heads the Senate Energy and National Resources Committee, stated: "Congress is more reactive instead of taking a leadership position. . . It is not looking at what is around the bend. We're almost in the same situation that we were before the energy crisis--fat, dumb, and happy. . . . It's not a matter of if there is going to be another energy crisis; it is a matter of when" (15:11). The President of the U.S. closes the ring on the circle of domestic political threats. President Reagan has, in essence, set the tone for the country. Martin Kusher of Michigan's Energy Administration believes he's "portrayed energy as an unnecessary sacrifice." James Schlesinger sums it up best: "This nation typically oscillates between panic and complacency in energy matters. We are now in a renewed pattern of complacency--during which we are sowing the seeds of the next energy crisis--which will likely occur in the 90s" (15:11).

An example of the complacency among the American public, industry, and top leadership relates to the fact 33 states have authorized 65 miles per hour speed limits on interstate highways--and bigger cars are the trend (20:14; 69:44). Concerns regarding leadership in energy management are significant. For example, at a U.S. energy policy debate sponsored by the Petroleum Industry Research Foundation, it was alleged that the U.S. has no consistent energy policy and too much turnover among energy officials. Some grim statistics cited by members of the House Energy Committee bear this out: The U.S. government "slashed energy research and development funding by 66 percent; bought oil for the Strategic Petroleum Reserve (SPR) when it was $35/barrel and cut purchases at $10/barrel; and now supports a 100,000 barrels per day SPR fill rate only if Congress comes up with the funds" (19:35).

Military Threats

Because of increased emphasis in the Persian Gulf, the U.S. has committed more military forces to that region; this impacts the defense budget and the ability of the U.S. to protect other regions in the world if several conflicts broke out at once. This ties closely with the economy: without a strong economy the U.S. Congress will not vote in favor of the military expenditures required to support global foreign policy (12:162).

Economic Threats

In 1946 the U.S. had more than one-half the world's gross national product (GNP)--in 1982, the U.S.' GNP of over $3 trillion comprised only 30 percent of the world economy. Economic interdependence now characterizes the U.S. economy. The vital role oil plays in this economy, combined with economic interdependence, creates a very real concern about the impact of future oil cutoffs and/or price fluctuations on the future of the U.S. economy. Past results included severe recession, high prices, high unemployment, decreased productivity, to name only a few problems (12:3). Moreover, the same discussion of economic threats in the international arena apply to domestic economic threats.

Another economic threat encompasses the impact of expensive environmental regulations levied by the U.S. Environmental Protection Agency. (This threat also crosses the threshold into the political arena.) One hypothetical, worst-case waste management program would result in a 22 percent reduction in U.S. oil production and a $10 billion annual increase in consumer costs. This study is still underway, but certainly poses a potentially devastating economic threat to the health of the oil industry and, subsequently, U.S. national security (26:19).

Strategies to deal with threats--international and domestic--need to be developed. These threats are very real and threaten to compromise today's way of life.

Chapter Four

IMPACT OF THREATS ON U. S. NATIONAL SECURITY

"National security is . . . the ability to preserve the nation's physical integrity and territory; to maintain its economic relations with the rest of the world on reasonable terms; to protect its nature, institutions, and governance from disruptions from outside; and to control its borders" (12:4). The energy issue very definitely impacts the security of the United States in political, military, and economic terms. These terms combine with both the domestic and international environments to create an extremely complex arena which must be dealt with delicately and sensitively by the U.S. government to assure U.S. national security.

POLITICAL IMPACT

National security within the United States depends greatly on her relationship with her allies and friends. Political issues play a vital role in this relationship with a great deal of overlap in the military and economic arenas. The U.S.' allies and friends' interests do not always correlate with U.S.' interests. The U.S. must be constantly attuned to their interests and work a delicate foreign policy balancing act. This particularly applies in the case of oil: The USSR is working toward gaining increased dependence of Western Europe on USSR oil supplies through increased exports to her--against U.S. desires. Another example involved the shifting of Western Europe and Japan's foreign policies toward the Arab states and away from Israel when they discovered the power of the oil weapon. These two examples show the policy splits which can occur with U.S. allies and friends, based on shifting interests. Bottom line: the U.S. must be aware of the shifting sands and respond in the best interests of the U.S. without widening the gap between U.S. and her allies (12:8, 41).

Politically, the U.S. must be ever alert to the reaction the USSR could take in response to U.S. policy regarding oil. Because of the diverse nature between the ideologies and governments, U.S. national security is constantly constrained--the U.S. must continually be attuned to the reaction of the USSR to assure no conflict with that superpower which could quickly escalate to a nuclear war (12:45).

Domestic complacency could result in lack of long-term energy plans to ensure energy self-sufficiency, or at least some degree of it. The result could well be inability to defend this nation, coupled with loss of current lifestyle.

And, finally, the highly volatile Middle East could stop access of her rich oil supply to the oil-dependent United States. This threat is particularly viable if the U.S. should take a policy stance which Middle Eastern countries don't perceive as in their best interests (for example, U.S. foreign policy toward Israel).

In summary, oil affects political issues which impact the national security of the United States. The U.S. must be sensitive and acutely attuned to the security interests of other nations--and develop foreign policy which takes these factors into account. The U.S. must continue to have access to foreign supplies of energy--at least until the U.S. public supports development of long-term energy alternatives.

MILITARY IMPACT

The security of the U.S. depends on her ability to defend her borders, to contain communism vis-a-vis the USSR, and to support her allies--particularly Western Europe and Japan. Excess dependencies on imported oil could lead to a major conflict involving the U.S. and her allies. This is a fact the U.S. must be prepared to face since both the U.S. and her Western allies rely extensively on oil supplies from the highly volatile Middle East. As a result, a regional conflict is a very real possibility (12:45).

ECONOMIC IMPACT

The tremendous fluctuations in oil prices and supply patterns since 1973 have directly related to the world's poor economic performance. For example, the balance of trade deficit severely increased when the 1979-1980 oil price increases alone resulted in exporters gaining $240 billion a year from importers due to transfer of resources (69:45).

The major international oil disruptions in 1973-74 and 1979-80 massively damaged the U.S. economy--and she still hasn't fully recovered. Severe disruption in the Middle East--which now supplies nearly 40 percent of the world trade in oil (63:42)--"could spark a wave in panic buying and wipe out oil stores practically overnight" (69:45). The impact of this would generate another worldwide economic shock. Harold Brown, former Secretary of Defense, predicts that a future oil disruption which causes prices to increase by 50 to 100 percent or supplies to decrease by 10 to 20 percent would "require controls and allocations previously seen only in war to handle a disruption of that magnitude" (12:41). The U.S. would have to reduce oil imports to about 10 percent of consumption to avoid a major dislocation of either a cutoff or major price increase. The current lifestyle people in the United States have grown to enjoy would certainly be in jeopardy (12:41).

Moreover, the impact to U.S. allies would be even more profound. They are almost totally energy dependent. Therefore, because of the tremendous impact to their economic systems--if the U.S. could not come to their aid--they could easily sway toward the USSR for support. Further, the developing nations, whose geographical positions expose them to pressure from the USSR (or surrogates) could succumb to USSR pressures. The domination of developing

countries by the USSR could damage or threaten U.S. national security (12:161). Further, the economic difficulties--such as recession and increased balance of trade deficit--caused by the rise in oil prices have been major factors in limiting industrialized democracies and developing nations from building their military forces. This, in turn, severely limits their ability to share in defense of their countries (12:39).

However, not only do oil price increases impact economies worldwide, price decreases can create just as much havoc. The industrialized nations--such as the U.S., the countries of Western Europe, and Japan--were among the beneficiaries of the Organization of Petroleum Exporting Countries' (OPEC) increased spending (annual increase of 15 percent) between 1973 and 1979. But the OPEC countries have sharply decreased spending due to declining oil prices--economies worldwide have suffered as a result (69:45). On the positive side, decreasing prices resulted in benefits for the U.S.--the Consumer Price Index dropped 0.4 percent in February 1986. The drop was the largest in more than 32 years and the first since December 1982. However, decreased prices resulted in exploration budget cuts and abandonment of uneconomic wells. This, in turn, points to decreased U.S. production and increased reliance on cheap, foreign sources of oil--but at what subsequent future price (59:4E)?

Chapter Five

ALTERNATIVE ENERGY SOURCES, CONSERVATION AND STOCKPILING

Because of the complexity and seriousness of the threats (discussed in Chapter Three) which face U.S., Western and other allies' oil supplies, the U.S. must continue to explore alternative sources of energy. She must also enhance conservation and stockpiling efforts to ameliorate the energy issue which threatens U.S. national security.

ALTERNATIVE ENERGY SOURCES

The U.S. has explored various alternative sources of energy which would result in lessened dependence on foreign oil.

Synthetic Fuels

Synthetic fuels are created by converting coal and other domestic energy resources into gas and other fuels. This promising energy source rose to the forefront in 1973 during the Middle East oil embargo--public interest was raised in alternative energy sources due to oil price increases and to the great concern generated by foreign control of the U.S. economy (31:588). In 1980 Congress created the U.S. Synthetic Fuels Corporation (as a direct result of the 1979 oil embargo) to develop the technology to convert these resources. However, on 18 April 1986, this corporation went out of business because Congress eliminated the funding. Congress said declining oil prices made the effort too costly. The plant was turned over to the Department of Energy (DOE) (25:307). Questions to consider: What happens when oil prices increase? Will the DOE be able to continue developing the technology to make coal gasification an economical alternative to oil? The U.S. government must pursue a long-term solution to achieve U.S. energy independence--coal gasification is one means to achieve the solution.

Coal

Coal is plentiful in the U.S. and was used extensively prior to World War II, but its use declined when oil and natural gas became more available. Constraints involving the future use and availability of coal include availability of adequate, economically efficient, and environmentally acceptable methods of transportation; air pollution; and problems involving managing and regulating coal industry development (74:162-165). President Ronald Reagan announced his support on 19 March 1986 for a five-year program in which the U.S. government and American industry would spend $5 billion on developing the technology to burn coal more cleanly (17:259). This is a good

first step toward enhancing the use and development of this readily available resource.

Nuclear Power

Although nuclear power plants present environmental problems, they still remain a viable energy source. Unfortunately, the general public does not understand nuclear energy--it's been a symbol of destructive power. The merits of nuclear power need to be addressed in three areas: first, safety of reactors and of fuel cycles; second, long-term disposal of radioactive waste; and finally, proliferation of nuclear weapons (33:56-57). Moreover, the costs to develop nuclear power plants are prohibitive. However, standardized plants (designed through legislation) and a means to predict costs--such as a one-stop licensing process--are methods which could ensure less costly development (59:4E).

Other Alternative Sources

Other sources which warrant continued development include oil shale, hydroelectric power, solar energy, and geothermal energy. Oil shale is hardened clay that has oil trapped in it. Oil shale resources hold enormous potential as an energy source, but currently contribute practically nothing. The potential energy from this source exceeds the Middle East's petroleum reserves (31:589). Obstacles to be overcome include "extremely high development costs, water resources. . .uncertainty of crude oil prices, lack of access to prime federal lands, and multifaceted environmental problems" (74:154). Disposing of leftover rock if shale has been mined before the oil is extracted and transportation difficulties pose yet more problems (31:588). One technique which bypasses the need to dispose of the rock has been to obtain the oil from the shale while still underground using underground fires. But there is still the shortage of water--especially in the West--where most shale is found (31:588). Even though the difficulties of exploiting this source of energy appear insurmountable, research in this lucrative area is imperative. Hydroelectric power harnesses the energy of falling water in streams to produce electric power. However, environmental factors play a deciding role in determining the fate of a proposed project. Solar energy is renewable and is potentially available in large amounts. Electrical power may be produced five ways from solar energy: photovoltaic conversion, wind power, solar thermal electric power cycles, ocean thermal gradients, and biomass-fixed power plants. However, all of these options have technological and economic problems which must be overcome. Geothermal energy is the natural heat of the earth. In summary, these are all potentially valuable sources of energy which the U.S. could use as alternatives to oil--but research must be continued (74:166, 169-170).

Yet another innovation which could impact the demand for oil involves superconductivity. Superconductivity is the "ability of a substance to conduct electricity without any resistance (perfect conductivity)" (55:48). As research continues and applications are developed in this new arena, natural gas demand in the utility sector and demand for oil in the transportation sector should decrease. This is an exciting and relatively new area which is rapidly maturing and has outstanding potential (55:48).

CONSERVATION

President Theodore Roosevelt clearly understood the need for conservation as evidenced in his message to Congress on 22 January 1909:

> In this stage of the world's history, to be fearless, to be just and to be efficient are the three great requirements of national life. National efficiency is the result of natural resources well handled, of freedom of opportunity for every man, and of the inherent capacity, trained ability, knowledge, and will--collectively and individually--to use that opportunity (61:126).

President Franklin D. Roosevelt subsequently created a National Resources Planning Board to "make a comprehensive analysis of all resources and to frame plans for their use and development. . . . By 1935 the new campaign for conservation was in high gear . . . Millions of Americans now looked on our resources with a new sense of personal responsibility and gave fresh support to the effort for national leadership" (61:145-146).

Conservation has been on this nation's agenda at least 78 years. Moreover, as early as 1939 a government energy resource committee said the U.S.' oil and gas supplies were running out and that "we must consider whether to use more wisely our available supply, to manufacture high cost substitutes, or to depend on foreign oil. . . ." (21:39). The U.S. still has not found a way of using available energy supplies more efficiently, wisely, or economically. Conservation can both help to save domestic resources as well as reduce U.S. dependence on imported oil. A good conservation program would involve conserving heating oil in the residential and commercial sector and gasoline in the transport sector. Oil conservation would primarily be concerned with the "substitution of alternative energy, labor, and capital for petroleum to save money as well as to lower fuel consumption" (21:39-40, 54). Several areas are ripe for conservation consideration and/or maturation:

Natural Gas Deregulation

Natural gas price controls hold down the price of gas. The effect is to hold down prices, thus encourage waste and the use of less efficient equipment because customers don't pay the full price of energy. Deregulation would cause realistic prices which would result in manufacturers designing the most fuel-efficient equipment and consumers shopping around for the heating/cooling system that uses the least fuel (21:42-44). If Federal price controls were deleted, some groups believe that the nation would use more gas--therefore, consume less oil (59:4E).

Oil and Gas Consumption in Households and Businesses

The main target in this sector is heating oil. The federal government should require minimum efficiency standards for gas- and oil-burning furnaces and boilers--for example, 80-90 percent efficiency. To encourage consumers to purchase the energy efficient equipment, the government should offer a tax credit. The current tax credit list:

. . . should be broadened to include credits for installing a new gas heating system with at least 75 percent efficiency and for other alternatives to oil heat, such as wood stoves, heat pumps, and electric furnaces (which are 100 percent efficient). . . . Similarly, businesses should be able to accelerate depreciation of investments in high-efficient heating or power equipment (21:44-47).

Oil Conservation in Industry

Continue pushing to convert manufacturing plants from oil and gas to coal where practical. At a minimum, as the largest energy consumers in 1980--consumed 40 percent of the total U.S. energy--the manufacturing sector needs to at least use oil and gas more efficiently (21:47-51).

Oil Conservation in Transportation

The transportation sector consumes one-half the total oil used in the U.S. One means to promote conservation in this sector is to impose a large tax on motor fuel sales. Moreover, another means is to create incentives to enhance development of more fuel efficient vehicles (21:51-54).

STOCKPILING

To reduce the impact of possible interruptions of foreign oil imports, the Ford Administration developed a stockpile system for strategic oil: the Strategic Petroleum Reserve (SPR). The SPR was established under the Energy Policy and Conservation Act of 1975. Salt caverns in Louisiana and Texas were identified to hold the strategic oil imports--filling began July 1977 with a target fill of one billion barrels (six months' supply) by 1985 (74:154). In December 1983, Mr. Schlesinger reasserted that the SPR should have a minimum six months' supply of oil to minimize the impact of potential disruptions in foreign supply sources (50:29).

However, the Reagan Administration subsequently cut back the SPR target from one billion barrels to 750 million barrels. This equates to only a four and one-half month oil supply. The big question is whether this supply would adequately meet U. S. needs in the event of a major disruption--and/or meet allied needs (51:126A). Another concern is that in December 1985, the SPR contained only 490 million barrels of oil--only enough to replace 100 days of oil imports! (42:434) In 1987 the figure climbed only slightly--to 520 million barrels of oil--still only a 100 day supply in view of increasing imports. Furthermore, the Reagan Administration wants to decrease the daily fill rate from 75,000 barrels to 35,000 barrels. At that rate the SPR goal of 750 million barrels would not be met until the next century. To further compound the problem of achieving the SPR goals, the storage capacity of the SPR is only 580 million barrels (51:126A) The single driving factor behind the problems and issues concerning the SPR is the federal budget. Even though oil is half the price--$17.44 per barrel in December 1987 (34:1B)--compared with 1981, the White House has decreased the SPR target, is balking at spending money for construction of SPR storage facilities, and wants to decrease by 50 percent the amount of crude oil that flows into the SPR. Moreover, U.S. dependency on foreign oil continues to increase--imports have

increased one million barrels daily compared to a year ago (51:126A). Today the U.S. imports 35 percent of her oil (63:42).

The benefits of assuring an adequate SPR outweigh budgetary constraints. For example, it could be used to stabilize prices against efforts of OPEC to raise them. Another advantage would benefit the international arena which, in turn, would benefit the U.S.: Cover shortages within the Western alliance--and, again, restrain price increases. Yet another obvious benefit is to prepare against future oil supply interruptions. The fact that the SPR is one of the few U.S. energy programs given any budget priority makes it all the more important to maximize its effectiveness by giving it top priority in the federal agenda and assure continued funding (32:267-269).

Chapter Six

RECOMMENDATIONS

As is evident from the foregoing discussion, oil--as an integral part of the tremendously complex energy issue--tangles the U.S. with a myriad of international and domestic factors and actors. Oil threats impact the national security of not only this nation, but the entire world. No single, easy answer exists to resolve the oil issue but complacency must stop--and action begin--NOW! It is clearly evident that the overall energy issue must be pushed to the forefront of the U.S. political scene--the U.S. cannot afford to take a complacent attitude nor continue to take merely short-term measures nor wait for someone else to take the reins and initiate action. The U.S. must actively search for long-term measures to prevent recurrence of a disruption to oil supplies; to be able to react to price fluctuations; and most important, decrease dependence on foreign oil. There are several measures the U.S. should take in the interests of U.S. national security.

First, the U.S. Government needs to put the energy issue at the top of the national agenda. Administration officials and elected politicians need to look beyond their own selfish, short-term interests--open their eyes and crystal ball into the future to see what's ahead. A step in the right direction would be to establish a national energy debate composed of people with a wide variety of backgrounds, to include business, science, energy, economic, environmental, etc. The U.S. Government needs to include representatives from all disciplines and sectors affected. This debate/forum should focus on energy objectives to be achieved and how to achieve these objectives. Some obvious objectives this forum should address include: Establish energy self-sufficiency; decrease vulnerability to disruption of foreign oil; decrease dependence on oil; maintain a balance between the growth of world demand for oil and the growth in world supply of oil; and expand the energy resource base.

Second, a massive effort to woo the media must be made. This effort should begin with top level leadership. The media invades virtually every household in the U.S. The media must understand the desired energy objectives and why they are needed. They can be very useful in convincing the American public that positive action toward the energy issue must be taken.

Third, public support must be obtained--with the assistance of the media--to achieve these objectives. Without it, complacency will continue. Educating the public is essential. The public must do their part to convince the elected officials they are willing to make sacrifices if necessary to secure energy self-sufficiency or some semblance of it.

Fourth, a pressing priority must be the Strategic Petroleum Reserve (SPR). The target needs to be changed to include a minimum six months supply; additional storage space must be created; and then the SPR filled with a sense of urgency.

Fifth, the U.S. Government should create incentives (such as tax credits or federal assistance) to encourage continuing technology development. Top political leadership should also focus efforts toward alternative energy sources, conservation, and stockpiling discussed in Chapter Five. Additionally, they need to emphasize long-term measures.

Sixth, the U.S. Government should establish agreements with allies and friends (Western Europe, Japan, and others)--specifically in the research arena--to work together toward energy self-sufficiency. Efforts should be pooled in this endeavor. Arrangements should be made to combine energy resources and share shortages in a crisis.

Seventh, political leaders need to instill a permanent change of attitude among Americans so they understand that energy is not an unlimited resource. They should accomplish this feat beginning with the elementary school education program. These recommendations are not an all-encompassing panacea, but they offer a starting point to continue down the long, hard, twisting path toward a future energy self-sufficiency and a secure United States of America.

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APPENDIX

1986 ENERGY STATISTICS

APPENDIX

1986 Energy Statistics

1. Oil	Reserves (Billion Barrels)	Production (Thousand Barrels Per Day)	Consumption (Thousand Barrels Per Day)
U.S.	26.9	8,680	15,726
USSR	59.0	11,615	8,650
Middle East	401.9	12,577	2,682
Western Europe	21.9	4,002	11,956
Japan	-	-	4,333
China	18.4	2,614	1,740
Mexico	54.7	2,430	1,529
Venezuela	25.0	1,787	383
Nigeria	16.0	1,470	215
Indonesia	8.3	1,390	475
Canada	[illegible]	1,471	1,517

2. Natural Gas	Reserves (Trillion Cubic Feet)	Production (Trillion Cubic Feet)	Consumption (Trillion Cubic Feet)
U.S.	191.6	16.04	17.28
USSR	1,500.0	24.19	20.30
Middle East	925.3	2.48	2.27
Western Europe	229.7	6.59	8.79
Japan	-	.09	1.42
China	30.0	.63	.62
Mexico	76.5	.93	.95
Venezuela	59.0	.67	.62
Nigeria	47.0	.11	.11
Indonesia	49.4	1.26	.51
Canada	99.6	2.96	2.05

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3. Coal	Reserves (Billion Short Tons)	Production (Billion Short Tons)	Production (Trillion BTU)	Consumption (Trillion BTU)
U.S.	290.84	.888	19,480	17,482
USSR	296.76	.825	13,950	12,952
Middle East	-	.001	30	111
Western Europe	99.68	.571	9,060	12,331
Japan	1.12	.018	390	2,953
China	108.90	.959	17,740	17,103
Mexico	2.11	.009	169	181
Venezuela	-	-	-	-
Nigeria	-	-	-	-
Indonesia	-	.002	50	-
Canada	7.55	.066	1,410	1,114